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SEARCH

People / Faculty



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Our group, centered in the MIT Media Lab and jointly affiliated with the MIT Department of Biological Engineering and the MIT Department of Brain and Cognitive Sciences, works on inventing new tools for the analysis and engineering of brain circuits. We have been developing molecules, hardware, and methods to activate, silence, record, and analyze neural activity and circuit signaling, within and between brain circuits. We also work on novel, focal, noninvasive methods for human brain stimulation.

We also seek to discover the principles of how to use these tools optimally, both for repairing neurological and psychiatric pathologies, and revealing principles of brain circuit operation.

Ideally we will develop new approaches to solving major unaddressed problems in neuroscience, and to repair the neural computations corrupted in disease states such as Parkinson's disease, epilepsy, and schizophrenia.

We recently received, amongst our major recent awards, the Research Award for Innovation in Neuroscience from the Society for Neuroscience, the NIH Director's New Innovator Award, and election to Discover Magazine's "20 Best Brains Under 40."

Zorzos, A. N., Boyden, E. S.*, and Fonstad, C. G. (2010) A Multi-Waveguide Implantable Probe for Light Delivery to Sets of Distributed Brain Targets, *Optics Letters* 35(24): 4133-5.

Chow, B. Y.*, Han, X.*, Dobry, A. S., Qian, X., Chuong, A. S., Li, M., Henninger, M. A., Belfort, G. M., Lin, Y., Monahan, P. E., Boyden, E. S. (2010) High-performance genetically targetable optical neural silencing by

light- driven proton pumps, Nature 463:98-102.

Han, X. and Boyden, E. S. (2007) Multiple-color optical activation, silencing, and desynchronization of neural activity, with single-spike temporal resolution, PLoS ONE 2(3): p. e299.

Boyden, E. S., Zhang, F., Bamberg, E., Nagel, G., Deisseroth, K. (2005) Millisecond-timescale, genetically-targeted optical control of neural activity, Nature Neuroscience 8(9):1263-1268.

Additional Publications



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